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Appendix A. Definitions

Acceptable Risk. The risk that is understood and agreed to by the program/project, program/project Governing Body, Mission Directorate and/or Mission Support Office, and other customer(s) sufficient to achieve the defined success criteria within the approved level of resources.

Activity. An operation that sustains NASA as an organization. Unlike projects, which are temporary and unique, activities are ongoing and repetitive.

Acquisition. The acquiring, by contract, of supplies or services (including construction) through purchase or lease, whether the supplies or services are already in existence or must be created, developed, demonstrated, or evaluated. Acquisition begins at the point when Agency needs are established and includes the description of requirements to satisfy Agency needs, solicitation, and selection of sources, award of contracts, contract financing, performance, administration, technical, and management functions directly related to the process of fulfilling Agency needs by contract.

Agency Program Management Council (Agency PMC). The senior management group, chaired by the Associate Administrator or designee, responsible for reviewing program formulation performance, recommending approval of proposed programs, and overseeing implementation of designated programs and projects according to Agency commitments, priorities, and policies.

Analysis of Alternatives (AoA). A formal analysis method that compares alternatives by estimating their ability to satisfy mission requirements through an effectiveness analysis and by estimating their life-cycle costs (LCC) through a cost analysis. The results of these two analyses are used together to produce a cost-effectiveness comparison that allows decision makers to assess cost and effectiveness simultaneously. An AoA broadly examines multiple elements of program/project alternatives (including technical performance, risk, LCC, and programmatic aspects), and is typically an important part of formulation studies. The terms, trade studies, trades, and tradeoff analyses, are often used in lieu of AoA, when the scope of the analysis is more limited.

Approval. The acknowledgement by the responsible official that the program/project has met expectations and formulation requirements and is ready to proceed to implementation.

Certification. A confirmation in formal documentation that an accepted standard has been met.

Component Facilities. Complexes that are geographically separated from the NASA Center or institution to which they are assigned.

Concurrence. The individual(s) reviewing and providing agreement within their span of responsibility of a document, product, or service that has yet to be approved.

Contract. A mutually binding legal relationship obligating the seller to furnish the supplies or services (including construction) and the buyer to pay for them. In addition to bilateral instruments, contracts include, but are not limited to: awards and notices of awards; job orders or task letters initiated under basic ordering agreements; letter

contracts; orders, such as purchase orders, under which the contract becomes effective by written acceptance or performance; and bilateral contract modifications.

Customer. Any individual, organization, or other entity to which a program or project provides a product(s) and/or service(s).

Decision Authority. The individual responsible for evaluating IA and program and project Governing Body recommendations, assessing program and project deliverables, and making the decision at a KDP that authorizes a program or project to transition to the next life-cycle phase.

Earned Value Management (EVM). A tool for measuring and assessing project performance through the integration of technical scope with schedule and cost objectives during the execution of the project. EVM provides quantification of technical progress, enabling management to gain insight to project status and project completion costs and schedules. Two essential characteristics of successful EVM are EVM system data integrity and carefully targeted monthly EVM data analyses (i.e., risky WBS elements).

Enterprise Architecture (EA). An explicit description and documentation of the current and desired relationships among business and management processes and information technology. An EA includes principles, an architecture framework, a technical standards profile, current and target architectures, and a transition strategy to move from the current to target architecture.

Environmental Impact. The direct, indirect, or cumulative beneficial or adverse effect of an action on the environment.

Environmental Management. The activity of ensuring that program and project actions and decisions which potentially impact or damage the environment are assessed/evaluated during the formulation/planning phase and reevaluated throughout implementation and performed according to all NASA policy and Federal, state, and local environmental laws and regulations.

Estimate at Completion. The sum of project actual costs to date, estimated to complete (ETC), and reserves. Contractor financial information is included in the project Estimate at Completion.

Evaluation. The continual, independent (i.e., outside the advocacy chain of the program/project) evaluation of the performance of a program or project, and incorporation of the evaluation findings to ensure adequacy of planning and execution according to plan.

Formulation. The assessment of feasibility, technology and concepts, risk assessment, team building, development of operations concepts and acquisition strategies, establishment of high-level requirements and success criteria, the preparation of plans, budgets, and schedules essential to the success of a program or project, and the identification of how the program or project supports the Agency's strategic needs, goals, and objectives.

Formulation Authorization Document (FAD). The document issued by the MDAA or Mission Support Office Official-in-Charge to authorize the level of formulation of a program whose goals will fulfill part of the Agency's Strategic Plan, Mission Directorate Strategies, or Mission Support Office Functional Leadership Plans. In addition, a FAD or equivalent is used to authorize the level of formulation of a project.

Governing Body. The council, committee, or other Agency body that has responsibility for the oversight of programs and projects, conducting reviews before KDPs, and making recommendations to the program and project Decision Authority on the program or project readiness to transition to the next phase of the program or project life cycle. In many cases it is the OMC for IT and institutional infrastructure programs and projects.

Highly Specialized Information Technology. Highly specialized IT is a part of, internal to, or embedded in a Mission platform. The platform's function (e.g., avionics, guidance, navigation, flight controls, simulation, radar, etc.) is enabled by IT but not driven by IT itself (e.g., computer hardware and software to automate internal functions of a spacecraft or spacecraft support system such as spacecraft control and status, sensor signal and data processing, and operational tasking.) Highly specialized IT acquisitions may include full development (where the information technology is a primary issue) to modification of existing systems (information architecture is firm and demonstrated in an operational environment) where information technology is not an issue. Real time is often critical - and few opportunities exist to use Commercial Off The Shelf (COTS) or Government Off The Shelf (GOTS) beyond microprocessors and operating systems because these systems are largely unprecedented or largely unique applications. Certain IT are considered mission critical because the loss would cause the stoppage of mission operations supporting real-time on-orbit mission operations and are identified as "highly specialized" by the Directorate Associate Administrator. Highly specialized IT is largely custom, as opposed to COTS or commodity IT systems or applications, and includes coding/applications that are integral parts of the research or science requirements, e.g., Shuttle Avionics Upgrade. Common engineering IT tools such as Product Lifecycle Management (PLM) systems, Computer-Aided Design (CAD) systems, and collaborative engineering systems and environments are not highly specialized IT.

Representative examples of highly specialized IT include:

Avionics software, real-time control systems, onboard processors, Deep Space Network, spacecraft instrumentation software, wind tunnel control system, human physiology monitoring systems, ground support environment, experiment simulators, Mission Control Center, and launch cameras.

Implementation. The execution of approved plans for the development and operation of programs and projects, the establishment of control systems to ensure performance to plan, and alignment with current Agency strategies.

Independent Assessment (IA). The general term referring to an evaluation of a program or project conducted by experts outside the advocacy chain. Specifically, a review or evaluation that results in an assessment of the program's or project's readiness (technical, schedule, cost, risk) to proceed to the next phase in the life cycle that is reported to a program or project Governing Body and Decision Authority.

Information Technology (IT). Any equipment or interconnected system(s) or subsystem(s) of equipment that is used in the automatic acquisition, storage, analysis, evaluation, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information by the Agency.

Information Technology Authority. The articulation of the role in the IT governance model of the Mission Directorates in relation to that of the Agency and Center CIOs and the checks and balances between them.

Integrated Baseline. The project's technical performance and content, technology application, schedule milestones, and budget. The integrated baseline includes the WBS, WBS Dictionary, integrated master schedule, preliminary life-cycle cost estimate, and workforce estimate, consistent with the program requirements on the project.

Integrated Baseline Review (IBR). An IBR is a review that includes total project (contracted as well as in-house NASA) efforts. It is conducted jointly with personnel responsible for the efforts. Specifically, an IBR verifies that the technical content of the performance measurement baseline is consistent with the contract scope, work breakdown structure, and actual budget and schedule; ensures that effort personnel have identified all risks and are aware of their responsibilities for their management; ensures that there is a logical sequence of effort planned consistent with the contract schedule; ensures the disciplined implementation of all project EVMS; establishes a forum through which the program/project manager and the technical staff gain a sense of ownership of the cost/schedule management process; and establishes the baseline for the life of the contract.

Internal Use Software. Software that is COTS, internally developed or contractor developed to meet NASA's internal needs, e.g., financial and administrative software, or communications software independent of a mission (space flight and associated ground support), with a projected life-cycle cost of $1,000,000 or more and a useful life of five years or more.

Investment. Resources, usually funding, along with a decision on how to apply those resources that results in a capability, product, or service that helps NASA achieve its Mission. Generally, the benefits of an investment exceeds the cost of the investment.

Key Decision Point (KDP). The event at a point in time in the program or project life cycle, usually at the end of a program or project life-cycle phase, when the program or project Decision Authority makes the decision (or not) to authorize the program or project to transition to its next life-cycle phase. Program KDPs are designated with Roman numerals, e.g., KDP II, and project KDPs are designated with letters, e.g., KDP B.

Lessons Learned. The significant knowledge or understanding gained through past or current programs and projects that is documented and collected to benefit current and future programs and projects.

Life-Cycle Cost (LCC). The total of the direct, indirect, recurring, nonrecurring, and other related expenses incurred, or estimated to be incurred, in the design, development, verification, production, operation, maintenance, support, and decommissioning of a project. LCC of a project or system can also be defined as the total cost of ownership over the project's or system's life cycle from formulation through implementation. It includes all design, development, deployment, operation and maintenance, and disposal costs.

Margin. The difference between the resource allocation to a cost, schedule, or technical performance parameter and the current actual or expected value of the parameter.

Metric. A measurement taken over a period of time that communicates vital information about a process or activity. A metric should drive appropriate action.

Mission Directorate. A primary implementer of a NASA mission area. Each Mission Directorate is led by an Associate Administrator who leads their respective mission area. Listed in the order they appear on the NASA organizational chart, the current Mission Directorates are as follows: Aeronautics Research Mission Directorate, Exploration Systems Mission Directorate, Science Mission Directorate, and Space Operations Mission Directorate.

Mission Support Office. Headquarters organizations that establish and disseminate policy and leadership strategies within assigned areas of responsibility in support of all NASA programs and activities. Refer to NPD 1000.3, for the list of offices included in this designation. As used in this document, the term refers to any Headquarters non-Mission Directorate office that initiates a program or project.

Non-Advocate Review (NAR). The analysis of a proposed program or project by a (non-advocate) team composed of management, technical, and budget experts (personnel) from outside the advocacy chain of the proposed program or project. It provides Agency management with an independent assessment of the readiness of the program/project to proceed into implementation.

OMB Exhibit 300. Exhibit 300, also called the Business Case, is the mechanism by which the Office of Management and Budget (OMB) measures an agency's level of compliance with laws and mandated management practices in its investment portfolio of major Information Technology and capital asset investments. OMB uses the Exhibit 300 to make both quantitative decisions about budgetary resources consistent with the Administration's program priorities and qualitative assessments about whether the Agency's programming processes are consistent with OMB policy and guidance.

Program. A strategic investment by a Mission Directorate or Mission Support Office that has a defined architecture and/or technical approach, requirements, funding level, and a management structure that initiates and directs one or more projects. A program defines a strategic direction that the Agency has identified as critical.

Program Commitment Agreement (PCA). The contract between the Associate Administrator and the cognizant Mission Directorate or Mission Support Office for implementation of a program.

Program Management Council (PMC). One of the hierarchy of forums composed of senior management that assesses program or project planning and implementation, and provides oversight and direction as appropriate. These are established at the Agency or Mission Directorate levels.

Program Plan. The document that establishes the baseline for implementation, signed by the MDAA or Mission Support Office Official-in-Charge, Center Director(s) (if appropriate), and program manager.

Program (Project) Team. All participants in program (project) formulation and implementation. This includes all direct reports and others that support meeting program (project) responsibilities.

Project. A specific investment having defined requirements, a life-cycle cost, a beginning, and an end. A project yields new or revised products that directly address NASA's strategic needs.

Project Plan. The document that establishes the baseline for implementation, signed by the cognizant program manager, Center Director (if appropriate), and project manager.

Project Success Criteria. Standards against which the program or project will be deemed a success. Project success criteria may be both qualitative and quantitative, and may cover mission cost, schedule, and performance results, as well as actual mission outcomes.

Quality Assurance. A planned and systematic set of actions necessary to provide confidence that the products or services conform to documented requirements.

Reserves. Resources (funding, schedule, performance, manpower, and services) held back by a project manager, which can be allocated for expansion, unforeseen events, or other project adjustments when they occur.

Risk. The combination of the probability that a program or project will experience an undesired event (some examples include a cost overrun, schedule slippage, malicious activities, environmental impact, failure to achieve a needed technological breakthrough or project success criteria) and the consequences, impact, or severity of the undesired event, were it to occur. Both the probability and consequences may have associated uncertainties.

Risk Assessment. An evaluation of a risk item that determines (1) what can go wrong, (2) how likely is it to occur, and (3) what the consequences are.

Risk Management. An organized, systematic decision-making process that efficiently identifies, analyzes, plans, tracks, controls, communicates, and documents risk to increase the likelihood of achieving program/project goals.

Safety. Freedom from those conditions that can cause death, injury, occupational illness, damage to or loss of equipment or property, or damage to the environment.

Security. Protection of people, property, and information assets owned by NASA which covers physical assets, personnel, IT, communications, and operations.

Stakeholder. An individual or organization having an interest (or stake) in the outcome or deliverable of a program or project.

Success Criteria. That portion of the top-level requirements that define what will be achieved to successfully satisfy the Strategic Plan objectives addressed by the program, project, or technology demonstration.

System. The combination of elements that function together to produce the capability required to meet a need. The elements include all hardware, software, equipment, facilities, personnel, processes, and procedures needed for this purpose.

Systems Engineering. A disciplined approach for the definition, implementation, integration, and operation of a system (product or service). The emphasis is on achieving stakeholder functional, physical, and operational performance requirements in the intended use environments over its planned life within cost and schedule constraints. Systems engineering includes the engineering processes and technical management processes that consider the interface relationships across all elements of the system, other systems, or as a part of a larger system.

Termination Review. A review initiated by the Decision Authority for the purpose of securing a recommendation as to whether to continue or terminate a program or project. Exceeding the parameters or levels specified in controlling documents will result in consideration of a termination review.

Validation. Proof that the product accomplishes the intended purpose. May be determined by a combination of test, analysis, and demonstration.

Verification. Proof of compliance with specifications. May be determined by a combination of test, analysis, demonstration, and inspection.

Waiver. A written authorization granting relief from a requirement that results in more risk than is inherent in the original requirement. Waivers grant permanent or temporary relief after the original requirement is baselined for the specific product or process.

Work Agreement. A formal agreement between the program/project and its supporting organizations, prepared for each program/project cost account and used to document agreements and commitments for the work to be performed, including scope of work, receivables/deliverables, schedule, budget, and assumptions.

Work Breakdown Structure (WBS). A product-oriented hierarchical division of the hardware, software, services, and data required to produce the program/project's end product(s), structured according to the way the work will be performed, and reflective of the way in which program/project costs, schedule, technical, and risk data are to be accumulated, summarized, and reported.

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